# The Effect of QR Codes on Tipping Behavior and the Link Between QR Codes and Environmental Concern

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*This study explores the integration of QR code tipping as a sustainable and convenient alternative to traditional tipping practices. As digitalization transforms consumer behavior, QR codes have emerged as a versatile tool that streamlines financial transactions and reduces the environmental impact associated with paper-based systems (Ozturkcan & Kitapci, 2023). The COVID-19 pandemic has underscored the necessity for contactless interactions, positioning QR codes as essential in minimizing health risks while promoting eco-friendly practices (Alamoudi, 2022). Research results indicate that environmentally conscious consumers are more inclined to adopt QR code tipping, motivated to minimize resource consumption and support sustainable initiatives (Ozturkcan & Kitapci, 2023). This shift in behavior highlights the potential of QR codes to influence positive changes in consumer habits, encouraging adopting sustainable practices in everyday transactions. The widespread implementation of QR code tipping could significantly advance sustainability goals within the service industry, offering a practical solution that balances convenience with environmental responsibility. As awareness and acceptance of this technology increase, QR code tipping is set to become a cornerstone of a more sustainable and responsible future.*

*Keywords: QR codes, tipping, environmental cues, sustainability, consumer behavior*

## INTRODUCTION

Tipping has been an integral part of the service industry, allowing customers to express gratitude for excellent services. Traditionally, tips were given in cash, with customers leaving a few dollars or a percentage of the total bill on the table to show their appreciation. However, with the advent of new technologies, such as quick response (QR) codes and other cashless payment options, the landscape of tipping has shifted significantly in recent years (Djayapranata & Setyawan, 2021). QR codes are small, square barcodes that can store a wide range of information and can be scanned using a smartphone camera. Customers using QR codes are contributing to digitizing the tipping process and progressively stepping toward reducing waste and conserving physical resources (Yuan et al., 2023). Adopting digital payments like QR codes for tipping reduces the need for paper receipts and coins and contributes to a more eco-friendly approach to tipping (Atkinson, 2013).

Despite the environmental benefits associated with QR code tipping, addressing the lack of awareness regarding the connection between QR codes and sustainability is essential. Customers tend to continue using traditional payment methods unless they are educated about alternative options (Fan et al., 2018). Without effectively communicating the benefits and convenience of digital payments, the benefits of QR code tipping may not be fully realized. This highlights the importance of advocating for QR code tipping by promoting its environmentally friendly qualities to both customers and service providers.

In light of this, we contend that actively promoting QR code tipping as an environmentally responsible method will likely favorably impact customers' willingness to tip and raise their environmental concerns. When customers perceive their tipping behavior as contributing to environmental preservation, they may be more motivated to participate in this sustainable tipping practice (Chang et al., 2021). Consequently, fostering an association between QR code tipping and eco-friendliness could drive positive environmental change.

As QR code tipping gains popularity, it is crucial to understand its potential implications for sustainable practices. Previous research on tipping has primarily focused on traditional cash-based tipping behaviors (Chen et al., 2023), leaving a gap in understanding how the shift towards QR code tipping might influence customers' tipping intentions and behavior, particularly regarding sustainability. Therefore, this study aims to fill this gap and shed light on the potential environmental benefits of adopting QR code tipping. Moreover, the role of customers' environmental concerns in moderating the relationship between QR code tipping and tipping intentions remains unexplored. Individuals who are more environmentally conscious may exhibit different tipping behaviors when presented with a QR code tipping option they perceive as having a positive impact on reducing paper waste and resource consumption (Ramzen et al., 2020). Examining the influence of environmental concern as a moderator will provide valuable insights into how businesses can tailor their messaging and promotions to different customer segments.

Lastly, the study will explore the significance of communication and education in promoting QR code usage as an environmentally friendly tipping method. Raising awareness about the environmental benefits of QR code tipping can be considered a social tipping intervention, which has the potential to influence customer behavior and promote sustainable practices (Berger, 2021). By understanding the role of communication and signaling sustainability, this study can expand the existing literature on QR codes and other digital payment options.

## LITERATURE REVIEW

### Tipping With QR Codes

Tipping has long been a part of the hospitality and service industry, serving as a way for customers to express appreciation for good service. Traditionally, tips were given in cash, with customers leaving a few dollars or a percentage of the total bill on the table. However, with technological advancements, tipping behavior has changed (Fan & Mattila, 2021; Lynn & McCall, 2016; Warren, Hanson, & Yuan, 2021). Specifically, the emergence of technology-enabled services such as mobile ordering and payment platforms like DoorDash, Grubhub, and Uber Eats has significantly impacted customers' tipping habits (Fan &

Mattila, 2021). Customers now have the option to provide tips before, during, or after receiving the service using a variety of payment methods (Khan, 2020; Warren, Hanson, & Yuan, 2021). The COVID-19 pandemic has accelerated this trend, as customers have become more receptive to contactless, low-touch, and secure payment options (Gursoy & Chi, 2020; Iskender, Sirakaya-Turk, Cardenas, & Hikmet, 2022; NRA, 2022). Through this experience, there is potential for a more positive influence on customers' perceptions of tipping, particularly with the use of QR codes.

The Pew Research Center has reported a significant double-digit increase over the last four years in the share of Americans embracing a "cashless" approach in their typical weekly transactions (Pew Research Center, 2022). QR codes play a pivotal role in simplifying the tipping process for customers, as they offer the convenience of tipping directly from their smartphones, eliminating the need for carrying physical cash. Furthermore, QR codes facilitate variable tip amounts, with customers easily inputting their desired tip value on their phones. Anonymity in tipping is another advantage provided by QR codes, catering to individuals valuing privacy.

A key advantage of QR code tipping is its adaptability across diverse settings. Beyond restaurants, cafes, and bars, QR codes find utility in other service industries like hair salons, spas, and taxis. They allow customers to express appreciation seamlessly, coinciding with their mobile interactions for appointments, directions, and more.

**Signaling Theory**

Signaling Theory (Connelly et al., 2011; Spence, 1973) provides insight into how organizations effectively communicate information about their qualities, intentions, or capabilities to external parties through discernible actions or signals. These signals, containing valuable information, are strategically disseminated to the public with the overarching goal of shaping the perceptions and emotions of various stakeholders such as consumers, investors, employees, and more, concerning the organization in question. Consequently, those receiving these signals utilize the conveyed information as a basis for appraising the originating entity’s competencies (Ferrier, 1997; Mahon, 2002).

Looking further into the dynamics of signaling, existing literature underscores that the general public frequently engages in internal cognitive processes to shape their judgments about an organization's overall excellence, a principle illuminated by Spence (1973) and Ferrier (1997). For example, using a QR code for tipping can indicate the user’s adaptability and comfort with technological advancements, as posited by Dellarocas (2023). Moreover, antecedent studies have demonstrated a link between an organization’s commitment to sustainability and its capacity to demonstrate the organization’s excellence and its dedication to societal welfare, a connection explored by Albinger and Freeman (2000) and Miller and Triana (2009).

However, our Study 1 unearthed a significant insight: in the absence of an informative signal highlighting the ecological benefits of utilizing QR codes, such as the reduction of natural resource consumption and the contribution to sustainability, the mere presence of a QR code has no discernible impact on consumers’ attitudes towards tipping nor their inclination to engage in tipping behaviors. Against this backdrop, we have developed a hypothesis that posits the introduction of an educational element within the QR code signal. This educational information is believed to moderate the connection between a consumer’s stance on sustainability and their propensity to participate in tipping activities.

**Technology Acceptance Model (TAM)**

The Technology Acceptance Model (TAM), derived from the Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975) and formulated by Davis (1989; Davis, Bagozzi, & Warshaw, 1989), is one of the most extensively employed frameworks for explaining individual behavioral intention to adopt a technological innovation. This model postulates that individuals' acceptance of information systems hinges on two key factors: Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). PU reflects the extent to which an individual believes that using a particular system would improve their job performance (Davis, 1989; Davis, Bagozzi, & Warshaw, 1989), while PEOU revolves around the extent to which an individual

perceives employing a specific system would be free of effort (Davis, 1989; Davis, Bagozzi, & Warshaw, 1989).

The important role PU and PEOU play in individuals' behavioral intention to use QR codes was confirmed in the study of the food traceability system (Kim & Woo, 2016) and mobile payment systems in Turkey (Türker, Altay, & Okumuş, 2022). The study of the traditional technology acceptance model (TAM) has also been extended to green and eco-friendly technologies in recent years. Anser, Yousaf, and Zaman's (2020) research on the green technology acceptance model and green logistics operations shows that green factors such as green consumerism and green innovation would increase green purchase decisions that convert into perceived ease of green products usage. The study of TAM on health professionals' behavioral intentions to adopt the eHealth system (Kalayou, Endehabtu, & Tilahun, 2022) found that perceived usefulness significantly influences both attitude and intention to use eHealth. Furthermore, Moslehpour et al. (2018) demonstrated that PU and PEOU fully mediate between personality characteristics and online purchase intentions among Taiwanese consumers.

Based on our understanding of PU and PEOU, we propose that the perception of usefulness and the perception of ease of use serve as moderating elements influencing an individual's inclination and capacity to tip using a QR code.

**Convenience and Eco-Friendly Behavior Using Mobile Devices**

The restaurant industry has been transitioning from traditional payment methods of cash and credit cards to various mobile payment methods consumers desire. Cobanoglu (2015) found that, when dining at chain restaurants, 44% of respondents preferred using mobile payments, compared to 39% preferred credit cards and 17% who preferred cash. Customers who favored mobile payments also perceive them as more convenient than other payment methods (Cobanoglu et al., 2015; Ozturk, Bilghan, Nusair, & Okumus, 2016). Consumers who depend heavily on smartphones for daily tasks are more willing to consider using mobile restaurant payments (Cobanoglu et al., 2015). Accordingly, factors such as convenience, compatibility, and perceived ease of use play a role in influencing consumers' intention to adopt mobile payment methods (Ozturk, Bilghan, Nusair, & Okumus, 2016).

QR code tipping methods align with the broader trend of digitalization and the convenience of mobile payment methods. Environmentally conscious customers may gravitate towards these methods due to the reduced need for physical resources like paper and coins. This approach could foster a culture of eco-friendly behavior and sustainability.

**Sustainability and Environmental Benefits of QR Codes**

Customers' values and environmental concerns are significant determinants of consumer behavior in the context of sustainability within the restaurant industry. Extensive research has been conducted on the relationship between consumer behavior and environmental concern in the restaurant and hospitality sector (Gupta et al., 2019; Han et al., 2018; Huang & Liu, 2017; Okafor, Khalid, & Gama, 2022; Rahman & Reynolds, 2016). Environmental concern is defined as "a specific attitude toward environmentally relevant behavior that encompasses a broader value orientation" (Fransson & Garling, 1999, p. 370). Environmentally sustainable consumer behaviors significantly influence environmental sustainability (Han, 2021; Halder et al., 2020; Steg & Vlek, 2009). Today, customers are strongly interested in demanding environmentally sustainable products (GreenPrint, 2021; Rahman & Reynolds, 2016; Verma, Chandra, & Kumar, 2019). They are more likely to purchase products from environmentally responsible hotels, restaurants, tourism destinations, resorts, and similar establishments (Han, 2021; Trang, Lee, & Han, 2019; Wang et al., 2018).

With the increasing global concern for the environment, the adoption of QR codes is growing as a sustainable solution for waste reduction and improved labor efficiency in the restaurant industry (Iskender, Sirakaya-Turk, & Cardenas, 2023; Littman, 2023; Ozturkcan & Kitapci, 2023). Moreover, many consumers are demonstrating greater attention to and responsibility for sustainability (Rahman & Reynolds, 2016; Verma, Chandra, & Kumar, 2019). According to the Business of Sustainability Index (2021), 77% of Americans express concerns about environmental impact, and 78% of customers are more likely to purchase

a product if it is labeled environmentally friendly. However, 74% of respondents admitted they don't know how to identify environmentally friendly products (GreenPrint, 2021). Therefore, presenting a clear image of sustainability through QR codes may influence customers' positive perceptions and contribute to increased QR code usage for tipping.

**Awareness and Willingness to Tip**

Integrating environmental educational features into QR code signage can transform tipping into an opportunity for positive change towards a greener, more sustainable future. This approach could raise awareness about environmental issues and motivate users to take action through their tips. Additionally, since users are not limited to the cash they have on hand, this approach may also increase their willingness to tip more generously.

Raising awareness empowers individuals to make a difference through conscious choices and behaviors. One effective approach to increasing awareness is to utilize cues that signal environmental sustainability. These cues serve as powerful reminders and incentives to incorporate specific practices into our daily lives.

Individuals are profoundly influenced by cues that serve as triggers, prompting specific actions. In the context of environmental sustainability, cues can serve as gentle nudges, encouraging individuals to adopt eco-conscious behaviors and engage with the sustainability actions shown. Educating consumers that QR codes are a sustainable option is a visual cue that reminds and motivates people to make more sustainable choices (Griffin et al., 2022).

Vermeir & Verbeke (2006) studied the connection between consumers linking the color green to environmental concerns. Their findings showed a strong engagement with sustainability and a perceived sense of consumer efficacy in consumers' actions positively influenced their attitudes toward purchasing sustainable products. Furthermore, this attitude was closely linked to their intention to purchase sustainable products.

Paparoidamis, et al. (2019) found that increasing the innovativeness of eco-friendly attributes can encourage higher adoption rates of eco-innovation. Presenting a green QR code with a tree seemingly growing from the code is an innovative cue that communicates a message of environmentally responsible practices and encourages consumers to use them as part of a more informed and eco-friendly choice. Furthermore, by displaying these cues in areas where tipping occurs, customers will feel they are fostering a greener and more environmentally conscious society when they tip with a QR code.

Cues can also be used as behavioral nudges to encourage pro-environmental actions. For instance, placing signs near light switches reminds people to turn them off when not in use, leading to reduced energy consumption (Schultz et al., 2007; Goldstein et al., 2008).

Alternatively, when conflicting cues arise, individuals don't make behavioral decisions due to confusion from the mixed signals. Hawkins (2019) contended that conflicting messages prompt consumers to strengthen and safeguard their identity, resulting in no change in consumer behavior. To illustrate, a conflicting message involves displaying a green QR code featuring a tree on a tip jar filled with paper cash. This conflicting signal would reinforce the consumer's already existing tendency to tip using cash, thereby perpetuating the behavior.

## CURRENT STUDY

The primary purpose of this study is to examine the intricate relationship between QR code tipping and customers' intention to tip, emphasizing the pivotal role of environmental concern. Additionally, we aim to understand how communication and educational initiatives can successfully encourage the adoption of QR codes as an environmentally responsible tipping method. This study is structured into two distinct stages to achieve these objectives.

**Stage 1: Evaluating Tipping Preferences**

The objective of Stage 1 was to evaluate consumers' inclination towards tipping methods, specifically determining whether they lean towards QR code tipping over conventional approaches (Hypothesis 1). This initial stage provides a foundational understanding of participants' prevailing preferences in tipping methods.

**Stage 2: Investigating Moderating Influences**

Following that, Stage 2 involves a more extensive investigation. In this stage, multiple hypotheses were examined to explore the moderating influences of environmental concern and the impact of signaling on the connection between QR code tipping and tipping behavior. We predicted that individuals with higher levels of environmental concern are more likely to favor QR code tipping over traditional approaches. Environmental consciousness is expected to shape their preferences and intentions, aligning with the eco-friendly attributes of QR code tipping (Hypothesis 2). In addition, we anticipated that consumers' prior experiences with QR code usage and familiarity with new technology for tipping are potential determinants in their decision-making process (Hypothesis 3). Moreover, we predicted that consumers willing to embrace new technology will likely have a positive attitude toward the QR code tipping method and willingness to tip (Hypothesis 4).

**Hypotheses Summary**

***Hypothesis 1:*** *Consumers are more likely to prefer QR code tipping over the traditional method (cash).*

***Hypothesis 2:*** *Consumers with higher levels of environmental concern are more likely to exhibit a higher willingness to tip.*

***Hypothesis 3:*** *Consumers with previous experience using QR codes for tipping are more likely to show a willingness to tip.*

***Hypothesis 4:*** *Consumers with higher levels of technology acceptance are more likely to prefer QR code tipping over cash and exhibit a higher willingness to tip.*

## METHODOLOGY

**Participants**

Data were collected from 352 participants via Prolific, an online survey platform that connects researchers with participants. The collected sample included 173 females (49.1%), 172 males (48.9%), 5 non-binary individuals (1.4%), and 2 who preferred not to say (0.6%). Concerning the racial composition, there were 37 African Americans (10.5%), 34 Asians (9.6%), 20 Hispanics (5.7%), 258 Whites (73.3%), and 3 who listed "Other" (0.9%). The mean age was 19.73 years (SD = 1.43).

**Procedure**

We employed a between-subjects design with three conditions to examine tipping behavior. Following the methodology of Walker et al. (2012), we used photographs to clearly illustrate each unique scenario to participants. Participants were introduced to a scenario where they attended an open bar event and ordered a drink. As the bartender handed them their drink, participants observed a tipping suggestion. Each participant was randomly assigned to one of three distinct tipping conditions. Participants were shown a traditional tip jar for the first scenario without any additional prompts or signals. In the second scenario, participants were shown a tip jar featuring a QR code for tipping alongside a visible sustainability signal, such as a tree image indicating that the tip contributes to an environmentally friendly cause. Lastly, participants were shown a prominently displayed QR code with a sustainability signal but no traditional tip jar. Participants were asked to complete a questionnaire after exposure to their assigned tipping suggestion.

## Measures

Participants completed a questionnaire in which they provided their demographic information and responded to items designed to measure their tipping behavior. After reviewing the scenario, we assessed the intention of tipping and their preference between cash or QR code. Response options ranged from 0 (0%) to 10 (90-100%). Previous research has successfully utilized this single-item measure approach to one-dimensional constructs (Kwon & Trail, 2005; Lee & Cunningham, 2015). Additionally, we measured participants' previous experience with QR codes to determine if this influenced their attitudes toward QR code tipping methods.

To understand participants' attitudes toward technology, several questions based on the Technology Acceptance Model 3 (TAM3 were included (Venkatesh & Bela, 2008). Furthermore, to gauge participants' conservation and green lifestyle mindfulness, as well as their concern for the environment, a set of questions derived from the Green Lifestyle Mindfulness and Environmental Concern Questionnaire was used (Carmody & Baer, 2008). Responses were made on a 7-point scale ranging from 1 (Strongly disagree) to 7 (Strongly agree).

# RESULTS

## Descriptive Statistics

Means, standard deviations, and bivariate correlations are presented in Table 1. The results indicate that the probability of tipping is significantly associated with individuals' intention to tip, their attitudes toward new technology, and their environmental concerns. However, past experience did not exhibit significant main effects on the probability of tipping. Notably, the intention to use QR codes for tipping is significantly related to participants' prior experience with QR codes, their attitudes toward new technology (TAM3), and their environmental concerns.

## Hypothesis Testing

Hypothesis 1 predicted that consumers are likely to prefer QR code tipping method over the traditional method (Tip Jar). A one-way ANOVA was conducted to compare the effect of three different conditions on participants' intention to tip. The ANOVA results indicated no significant differences in the mean intention to tip among the three conditions, $F(2, 350) = 0.631$, $p = .533$. The mean intention scores were similar across conditions, suggesting that the type of tipping method (traditional tip jar, QR code with environmental signal, or tip jar with QR code and environmental signal) does not significantly influence participants' intention to tip. However, in scenario 2 (QR code with environmental signal) participants' mean score was slightly higher than the two other conditions. Hypothesis 1 was not supported.

Hypotheses 2 through 4 predicted that participants' environmental concern (H2), previous experience using QR codes (H3), and attitudes toward new technology (H4) would influence participants' probability of tipping. In support of Hypothesis 2, results of the ANCOVA demonstrated a significant main effect for environmental concern on the probability of tip, $F(1,347)=10.25$, $p<.001$, $\eta p2=.029$. This indicates that participants with higher environmental concerns were more likely to tip.

Contrary to Hypothesis 3, the ANCOVA results did not reveal a significant main effect for previous experience using QR codes, $F(1,347)=1.65$, $p=.199$, $\eta p2=.005$. This suggests that past experience with QR codes did not significantly influence the probability of tipping.

Supporting Hypothesis 4, the results showed a significant main effect for attitudes toward new technology (TAM) on the probability of tipping, $F(1,347)=12.62$, $p<.001$, $\eta p2=.035$. This finding indicates that participants with positive attitudes toward new technology were likelier to tip. The overall model was significant, $F(1,347)=8.04$, $p<.001$, $\eta p^2=.104$, suggesting that the combination of environmental concern, previous experience with QR codes, attitudes toward new technology, and condition significantly predicted the intention to tip. The corrected model explained approximately 10.4% of the variance in the probability of tipping ($R^2 = .104$; adjusted $R^2 = .091$).

## DISCUSSION

Convenience and eco-friendly behavior are two elements that often intersect to shape behaviors (V. and Aithal, 2022). Convenience is highly valued because it streamlines tasks and saves both time and effort. However, these conveniences may have a negative environmental impact, increasing awareness of the need to adopt environmentally sustainable behaviors. The quest for eco-friendly behavior involves making conscious choices that minimize resource consumption, reduce waste, and minimize carbon footprints (Ghali-Zinoubi, 2022). Using technology that balances convenience and eco-friendliness represents a meaningful step towards a more sustainable and responsible way of living.

QR code tipping methods can be part of a larger trend toward digitalization and convenience. Djayapranata & Setyawan (2021) found that usefulness directly affects using QR codes in mobile payments. Ngo & Nguyen (2021) found that the user's attitude was a mediating factor in the intention to use QR code payments. Environmentally conscious people might prefer such methods due to the reduced need for physical resources like paper and coins and engage in eco-friendly behavior and sustainability (Jung and Joo, 2021).

QR codes have emerged as a versatile and eco-friendly tool with far-reaching implications for sustainability. While the sustainability advantages of QR codes, such as optimized resource utilization, are not within the purview of this research, several benefits directly relevant to comprehending the role of QR codes in tipping behavior hold significance for this study.

One of QR codes' most apparent sustainable advantages is their ability to facilitate paperless transactions. Traditional paper-based systems, such as printed tickets, receipts, and loyalty cards, contribute significantly to deforestation and waste generation. By adopting QR codes, individuals can maintain their financial records on digital platforms and reduce the need for paper and its associated environmental impact. The elimination of physical tickets and receipts conserves trees and saves on printing and transportation costs.

A second environmental benefit became critical in the wake of the COVID-19 pandemic. The importance of contactless interactions became more evident, especially when compared to using physical cash for tipping. QR codes played a crucial role in facilitating touch-free transactions, minimizing the risk of virus transmission. This protects public health and reduces reliance on disposable items, such as paper menus and physical tickets, often in landfills. By supporting contactless interactions for tipping, QR codes contribute to a cleaner and healthier environment for both the customer and the server.

Finally, in an era of rising environmental accountability, QR codes offer opportunities for increased public engagement in sustainability initiatives. By incorporating QR codes into educational materials, awareness campaigns, and public spaces, organizations can provide users with access to relevant information on environmental issues, conservation efforts, and eco-friendly practices. This engagement fosters a sense of responsibility and empowers individuals to take small steps toward sustainability in their daily lives.

## CONCLUSION

Integrating QR code tipping methods represents a significant intersection of convenience and eco-friendly behavior, offering a sustainable alternative to traditional tipping practices. As digitalization continues to reshape consumer habits, QR codes have emerged as a versatile tool that streamlines transactions and reduces the environmental impact of paper-based systems. The COVID-19 pandemic has further highlighted the importance of contactless interactions, with QR codes crucial in minimizing health risks while promoting sustainability (Ozturkcan & Kitapci, 2023).

The adoption of QR codes for tipping aligns with the growing consumer demand for environmentally responsible practices. By facilitating QR code tipping and reducing reliance on disposable items or cash, QR codes contribute to a cleaner and healthier environment (Ozturkcan & Kitapci, 2023). Moreover, their use in educational and awareness campaigns empowers individuals to engage in sustainable behaviors, fostering a sense of environmental responsibility (Negm, 2024).

Our findings suggest that environmentally conscious individuals are more likely to embrace QR code tipping, driven by their desire to minimize resource consumption and support eco-friendly initiatives. This behavioral shift underscores the potential of QR codes to influence positive changes in consumer habits, encouraging broader adoption of sustainable practices in everyday transactions (Negm, 2024).

Ultimately, the widespread implementation of QR code tipping could be pivotal in advancing sustainability goals within the service industry. It would offer a practical solution that balances convenience with environmental stewardship (Ozturkcan & Kitapci, 2023). As awareness and acceptance of this technology grow, it is poised to become an integral part of a more sustainable and responsible future.

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**APPENDIX**

**TABLE 1**
**DESCRIPTIVE STATISTICS OF TIPPING INTENTION ACROSS CONDITIONS**

| Item | *M* (%) | *N* | Std. Deviation |
|---|---|---|---|
| 1. Traditional Tip Jar (Cash) | 4.15 | 152 | 1.70 |
| 2. QR Code with Environmental Signal | 4.21 | 100 | 1.80 |
| 3. Tip Jar with QR Code and Environmental Signal | 4.15 | 101 | 1.75 |
| Total | 4.17 | 353 | 1.74 |

**TABLE 2**
**MEANS, STANDARD DEVIATIONS, AND BIVARIATE CORRELATIONS**

| Item | *M* (%) | *SD* | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|
| 1. Probability of Tipping | 69.90 | 30.35 | — | | | | |
| 2. Attitudes toward New Technology (TAM) | 4.90 | 1.14 | .203** | — | | | |
| 3. Past Experience | 4.39 | 1.24 | .095 | .577** | — | | |
| 4. Environmental Concern | 4.86 | 1.22 | .191** | .171** | .208** | — | |
| 5. Intention to use QR code for tipping | 4.17 | 1.73 | .168** | .778** | .588** | .108* | — |

*Notes.* ***p* < .001

**TABLE 3**
**SUMMARY OF ANCOVA RESULTS FOR HYPOTHESES 2–4**

| Hypothesis | Predictor Variable | F-Value | P-Value | Partial Eta Squared | Hypothesis Supported |
|---|---|---|---|---|---|
| H1 | Environ. Concern | F (1, 347) = 10.25 | P < .001 | np2 = .029 | Yes |
| H2 | Past Experience | F (1, 347) = 1.65 | P = .199 | np2 = .005 | No |
| H3 | TAM | F (1, 347) = 12.62 | P < .001 | np2 = .035 | Yes |